Claims

1. A method for substantially reducing the pathogenicity of an infectious agent, without killing said infectious agent, by removing or degrading a surface protein of said infectious agent, said method comprising contacting said infectious agent with substantially pure, non-pasteurized, naturally occurring lactoferrin under conditions sufficient to remove or degrade said protein.

2. The method of claim 1, wherein said infectious agent is a bacterium.

3. The method of claim 1, wherein said infectious agent is a virus.

4. The method of claim 1, wherein said infectious agent is *H. influenzae.*

5. The method of claim 1, wherein said protein is an autotransported colonization factor.

6. The method of claim 1, wherein said protein is IgA1 protease.

7. The method of claim 1, wherein said protein is an adhesin.

8. The method of claim 1, wherein said protein is Hap.

9. A method for substantially reducing the pathogenicity of an infectious agent, without killing said infectious agent, by removing or degrading a surface protein of said infectious agent, said method comprising contacting said infectious agent with recombinant lactoferrin under conditions sufficient to remove or degrade said protein.

10. A method for substantially reducing the pathogenicity of an infectious agent, without killing said infectious agent, by removing or degrading a surface protein of said infectious agent, said method comprising contacting said infectious agent with a substantially pure fragment of non-pasteurized, naturally occurring lactoferrin under conditions sufficient to remove or degrade said protein.

11. The method of claim 10, wherein said fragment is the N-terminal lobe of lactoferrin.

12. A method of inhibiting microbial colonization in a mammal comprising administering to said mammal a therapeutically effective amount of substantially pure, non-pasteurized, naturally-occurring lactoferrin.

13. The method of claim 12, wherein said mammal is a human.

14. A method of inhibiting microbial colonization in a mammal comprising administering to said mammal a therapeutically effective amount of a substantially pure fragment of non-pasteurized, naturally-occurring lactoferrin.

15. The method of claim 14, wherein said fragment is the N-terminal lobe of lactoferrin.

16. A method for substantially inactivating an infectious agent comprising contacting said infectious agent with substantially pure, non-pasteurized, naturally-occurring lactoferrin under inactivating conditions.

17. A method for substantially inactivating an infectious agent comprising contacting said infectious agent with a substantially pure fragment of lactoferrin under inactivating conditions, wherein said fragment has at least 100 amino acid residues.

18. The method of claim 17, wherein said fragment has at least 200 amino acid residues.

19. The method of claim 17, wherein said fragment is the N-terminal lobe of lactoferrin.

20. The method of claim 17, wherein said fragment is non-pasteurized.

21. The method of claim 17, wherein said fragment is isolated from naturally-occurring lactoferrin.

22. An antimicrobial pharmaceutical composition comprising substantially pure, non-pasteurized, naturally-occurring lactoferrin and a pharmaceutically acceptable carrier.

23. The composition of claim 22, wherein said composition is formulated for administration by the gastrointestinal tract, by inhalation, by the mucous membranes, or by the eyes.

24. The composition of claim 22, wherein said composition is formulated for oral administration.

25. An antimicrobial pharmaceutical composition comprising a substantially pure fragment of non-pasteurized, naturally-occurring lactoferrin and a pharmaceutically acceptable carrier.

26. The composition of claim 25, wherein said fragment is the N-terminal lobe of lactoferrin.

27. A method for producing an attenuated vaccine comprising the steps of

(a) contacting an infectious agent with lactoferrin under conditions sufficient to substantially inactivate said infectious agent; and

(b) formulating said inactivated infectious agent into a vaccine.

28. The method of claim 27, wherein said lactoferrin is non-pasteurized.

29. The method of claim 27, wherein said lactoferrin is isolated from a naturally-occurring source.

30. A method for producing an attenuated vaccine comprising the steps of

(a) contacting an infectious agent with a substantially pure fragment of lactoferrin under conditions sufficient to substantially inactivate said infectious agent; and

(b) formulating said inactivated infectious agent into a vaccine.

31. The method of claim 30, wherein said fragment is the N-terminal lobe of lactoferrin.

32. An attenuated vaccine comprising a substantially inactivated infectious agent, wherein said infectious agent is inactivated with lactoferrin.

33. The vaccine of claim 32, wherein said lactoferrin is non-pasteurized.

34. The vaccine of claim 32, wherein said lactoferrin is isolated from a naturally-occurring source.

35. An attenuated vaccine comprising a substantially inactivated infectious agent, wherein said infectious agent is inactivated with a substantially pure fragment of lactoferrin.

36. The vaccine of claim 35, wherein said fragment is the N-terminal lobe of lactoferrin.

37. A substantially pure peptide consisting of the N-terminal lobe of lactoferrin, wherein said lobe is isolated from non-pasteurized, naturally-occurring lactoferrin.